Summary of Boston Stakeholder Results

In Boston, Timothy R.E. Keeney, Deputy Assistant Secretary for Oceans and Atmosphere, hosted the workshops of 24 External Stakeholders for NOAA Strategic Plan. The stakeholders reviewed the five major theme areas and strategies from the two previous workshops. These theme areas are **Life and Property; National Defense and Homeland Security; Commerce and Economic Development; Healthy Oceans, Coasts and Coastal Communities; and Sustainable Species.** They discussed high level strategies and improved the organization of these strategies. Additionally, the attendees reviewed a second depiction of the themes as three End Outcomes – **Healthy Oceans and Coasts, Protect Lives and Property and Expand Commerce and Enhance Development.** VADM Conrad C. Lautenbacher, Jr.(ret.), the Under Secretary of Commerce for Oceans and Atmosphere, addressed the stakeholders at the end of the first day and took questions on the strategic planning process. The Admiral also opened the General Stakeholder workshop on the second day.

Outcome #1 Protect Lives and Property

Strategic Goals:

1. Improve Prediction
   - Reducing false alarms.
   - Measure by credibility of general public and our users.

2. Improve Navigation and mapping resources
   - Percent reduction in backlog of critical area maps

3. Enhance accessibility and reliable communication of information
   - Credibility of information
   - Cycle time to distribute information

4. Improve observations
   - Reduce inappropriate downtime of satellites
   - Integration with regional and national and international observation systems.

5. Enhance user capability to manage risks with information

6. Reducing the risk posed by erosion

Other Background Information

1) Monitoring and Baseline maps, charting, accurate positioning (shipping) for reference points. Real time information (general use/warnings)
2) Partnerships with local EMS. Public/Private coordinator (NWS agriculture and weather related). Interagency coordination for all of them.
3) Collection, dissemination, understanding information—integrity. Public warnings. NOAA agency recognition/ service marketing/ PR delivery.
4) NOAA recruitment/HR succession planning
5) Conflicting Environmental, Commercial, Balancing and Reconciling
6) Protect harbors
7) Good nautical charts
8) Improve predictions of catastrophic events
9) Reduce false alarms

10) Information for assessing risks of coastal mgmt/population
11) Develop coastal and inland monitoring system including baseline
12) Provide accurate positioning reference system, navigation, mapping, surveying, charting, monitoring, aviation, and emergency evacuation.
13) Improve Tsunami warnings
14) Spill trajectory (modeling)
15) Communication (increase with public)
16) Stronger mechanism for assisting local and state government decision makers (coastal and inland)
17) Update hydrologic surveys. (shipping and dredging)
18) Tide information (port systems for navigation)
19) Make more comprehensive charting (electronic and real time)
20) Real time information (radar)
21) Partnership with state and local port authorities including governments, decision makers
22) Satellite/radar advanced imaging
23) National shoreline study collaboration with USACOE
    Update flood insurance rate maps collaboratively with FEMA
24) Better policy with NWS and private sector—coordination and collaboration
25) Better means to collect/disseminate/distribute information (where do I go to find what I need).
26) Integrity of information and source
27) Public recognition to increase credibility, confidence in information
28) Public warning systems improvements—Internet/Satellite/radio/cell phone
29) GIS/GPS for regional specific information (layers of information fitting data)
30) Expansion of NOAA forecast system labs to predict weather better water vapor sensing for weather predictions
31) HR succession plan
32) Conflicting environmental/commerce responsibilities (Education, economic shift tourism and fishing balance)
33) Environmental restoration balance with commerce
34) Improve quality, integrity of air pollution monitoring

Outcome #2
Support National Defense and Homeland Security

Strategic Goals:

1. Improve Prediction
    a. Improve air and water dispersion modeling vulnerability assessment
    b. Improve realtime weather, space-weather data information to improve positioning, navigation, and communication

2. Improve Navigation and mapping resources
    a. Enhance port security: harbors/sea floor mapping

3. Enhance accessibility and reliable communication of information
    a. DOD/homeland security user satisfaction with products/services

4. Improve observations

5. Enhance user capability to manage risks with information

Other Background Information

1) Support and furnish information to Homeland Security Departments—Interagency Coordination—Better Communications

Is Homeland Security a NOAA area of concern or theme? Comment

2) Infrastructure and support EM

3) Research and environmental affects on weapons delivery—effectiveness.
4) Enhance observation platforms capabilities and sensor usage
5) NOAA brand recognition (development)
6) Enhance delivery of services –PR/marketing/ etc. (L & P)
7) Detect waterborne contaminates (sensing, mapping) locating, charting, instrumentation, data logger, communication—dissemination
8) Dual usage of estuarine sensors (expansion)

Overarching

- Monitoring (baseline)
- Maps, charting and accurate positioning and reference points
- Real time information
- Public Warning
- Partnerships with local EMS
- Public/private coordination (agriculture, NW weather related)
- Interagency Coordination
- Collection/dissemination/understanding information = integrity
- Agency recognition/service marketing, PR, delivery
- NOAA recruiting/HR succession planning (contracting, partnership, outsourcing)
- Conflicting environmental and commerce (balancing and reconciling)

Measures:

- Baseline and measurement of products (What do we have?) (Where do we have to be?)
- What do we have?
- Goals and timelines established
- Increasing measurement of surveys (hydrolographic, user and customer satisfaction measurement)
- Heights-increase local capacity to access height information when and where needed (effect of getting ships in/out of port—pilot information. More ships per unit time—in/out of harbor. (GPS-real time to LCM resolution) (planes—in and out of airport). (How many airport have system integration improvements, installed and operations)

1) Partnerships—customer survey—ask?
2) Number of committees
3) Number of partnerships
4) Number of standard tests
5) Number of regulatory reduction
6) Number of contacts and contracts
7) Number of MOU/MOA
8) Reduce CYA
9) Number of uses and awareness of info
10) Number of web hits
11) Number of improvement of user performance measures
12) Reduces Tasks vs. Times
13) Number of partnerships among partners
14) Collection/DIS/understanding
15) Information—Integrity
16) Number of increase users/web hits
17) Reform paper work/ Reduction act/develop a success mechanism
18) Number increase e government
19) Number of test, exercise, or education of warnings (public)—(scenario tendencies) S. Fl. Water mgmt. Ex.
20) Number of Collection hours (platform counts—plane)

Outcome #3
Support Commerce/Economic Development

Strategic Goals:

9) Improve Prediction
   - Improve seasonal and long term climate forecast
   - user confidence
   - Set higher target and goals for weather forecasts to improve predictions (needs assessment by user or industry)
   - Space weather, increase forecast accuracy
   - User confidence and satisfaction
   - Increase reliability of micro-climatic variables.
   - Increase abilities to use probabilistic forecasts to inform economic decision making
   - Oceanographic observations and forecasting
     1. Improve Navigation and mapping resources
        - Real-time water level measurements.
        - Improve mapping in EEZ
        - Improve GPS measurements
        - Enhanced Geospatial information through technology
        - Use of autonomous vehicles
        - Customer satisfaction with mapping
        - Multiple uses of data collected and improved access to data collected
     2. Enhance accessibility and reliable communication of information
        - Easy access to information
        - Maintaining a high quality data set for weather and climate data
        - Education and outreach
        - Continue marginal cost approach
        - Integrate data sets
        - Ease of use of data, formats and integration
        - Development of new data information products (don't impact public private partnerships)
     3. Improve, Maintain critical observations
        - Needs assessment and associated user satisfaction with the quality of the data
        - Enhancing the national data buoy center and increase information gathered
        - Encourage and support the use of observation data by value added providers
     4. Enhance user capability to manage risks and improve decision making with information provided by NOAA
        - Demonstration on how environmental and climate information affects market and global economy
        - Public valuation of information (need to develop metrics for this)
        - Proactive outreach
        - Identifying areas where information should be used and is currently not.

     5. Manage Sustainable Fisheries:
        - Protect marine biodiversity (Better description of interaction of the species)
        - Improved habitat (mapping)
        - Cooperative research
        - Artificial reefs, restoration (stock enhancement),
        - Developing sustainable aquaculture
        - Resolve conflicts over different data sets.
        - Improved observation on catches and location of catches. Population and harvest levels and locations.
        - New approaches to management ie. Community, MPA's, ecosystem.

- More transparency in assessment of conflicts.
- Determine appropriate capacity levels for fisheries.
- Institute sources of rent for fisheries to create funding stream for resource and management.
- Resolving conflicting federal-state jurisdiction.
- Improved assessments using variety of techniques.

6. Facilitate exploration and development of Marine Resources
    - Streamline Regulatory Process
    - Improve response to lawsuits
    - NOAA could improve contracting capabilities across the board
    - Expanding exploration opportunities and initiatives (pharmaceutical area, etc. etc.)

7. Enhance enjoyment and recreation of marine resources
    - Determine the economic value of coastal tourism
    - Water quality
    - Erosion
    - Overdevelopment, Privatization or single coastal use, ensure public coastal access
    - Promote sustainable fisheries for recreational use
    - Public education for stewardship
    - Ensure concerns heard in the management process for recreation stakeholders
    - Overall resource protection. Proper stewardship

Other Background Information

Fisheries:

1. Improve consumer access and socioeconomic value of fresh U.S. Fisheries Resources.
2. Fair and equitable fisheries regulatory body that is held accountable for actions (consistent F.M.C. membership)
3. National plan to prevent invasive species from destroying U.S. fisheries resources
4. Improve collaboration, open transparent scientific process
5. Improve quantity, quality and timeliness of regulatory process

Performance Measures:

1) Reduce the introduction of invasive species to zero.
2) Prioritize invasive species by cost of impacts.
3) Process: Use an independent body to review, track, and measure performance and ensure accountability.

Energy:

1. Improve NOAA's collaboration with government agencies to ensure access to energy resources on the Federal O.C.S.
2. Reform consistency regulations of CZMA on dispute resolution in shortest practical time at lowest level of party interaction (certainty and time lines)

Performance Measures:

1) Number of lease sales
2) Number of leases awarded
3) Number of wells drilled
4) Volume of oil, gas, and minerals produced.
5) Reduction in number of appeals to NOAA
6) Reduction in timeframes for Fed Consistency Review
7) Reduction in law suits filed
8) Reduction in cost by applicants from streamlined processes.
9) Reduction in federal time and money spent on application process costs

Maritime Commerce

1. Increase the economic value of U.S. Maritime and great lakes commerce.
2. Ensure accurate and timely charts and hydrologic surveys
3. Add more tidal gauges and NOAA buoys
4. Integrate satellite information e.g. water temperature, position information

Performance Measures:

1) Increase number of users of tidal gauges
2) Decrease groundings, etc.
3) Measure cost saved?
4) Measure costs of damage?
5) Increase time and money saved by users of tidal information, charts, etc.
6) Improve access to Satellite information
7) Number of users or user groups
8) Number of site hits
9) Number of emails replies
10) Number of phone inquiries

- Vessel monitoring systems (VMS)
  Vessel traffic control system? (Too expensive for individual fisherman)
- NOAA contract research to make technology more accessible—
- PM: Technology becomes cheaper
- PM: More systems purchased/installed

Commerce/Social/Economic/Sustainable Development:

1) Consumers: Are not protected
2) Consumer interests are not represented.
3) Equitable access to resources (fish)
4) Resource allocation issue
5) Foreign Fishing
6) No control over imported fish quality
7) Imported fish pushing out domestic
8) Recreational fishing expanding
9) Commercial fishing shrinking --Implications for heartland consumer
10) Recreational Fish QA/QC—Found to be high quality
11) Global environmental impacts from foreign fishing
12) Economic impacts to U.S. Fisheries due to foreign "dumping"
13) Fishing—Complicated Regulations
14) Inequitable fines. Commercial vs. recreational.

Energy Security

1) Make it less political
2) CZMA consistency appeal process too slow.
3) NOAA CZMA Cons. Regs need to be more precise/specific/detailed
4) Arbitration—type of process for all parties to come together
5) Consensus from all parties
6) Timely resolution of conflicts
7) Certainty as to process
8) NOAA needs to be clear on regulations req's for dispute resolution.

Improve Management information collection analysis and integration

Measures:

1) Time from collection to integration in management decisions.
2) Is amount of by catch data increasing

3) Is amount of by catch per unit date increasing?
4) Is amount of statistically significant data improving (standard needs to be developed?
5) Is amount of reliable data available increasing (statistically significant?)?
6) Is backlog of data being reduced?

Improve mapping of coastal and ocean habitat to understand use by all species by life stages.

Measures:

1) Number of maps developed for specific species
2) Measure/monitor customer satisfaction

Manage our costal and living marine resources at optimal sustainable levels

Measures:

1) Number of candidate, threatened, endangered or trust
2) Number of fisheries considered fully recovered
3) Number of fisheries considered managed at optimum level

Outcome #4
Healthy Oceans Coasts and Coastal Communities

Note: proposal to extend area of jurisdiction and take role as lead agency in EEZ

Strategic Goals:

1. Improve Prediction
   - Improved social and economic data for coastal communities
   - Monitoring and forecasting models
   - Novel uses of existing data
   - Climate and forecasting
   - Impact of sea level change on coastal communities
   - Better predictions of how land use and decisions on coasts affect marine resources
2. Improve observations
   - Overcome gap in data between 8 meters and shore and estuaries
   - Incursion of freshwater and seawater (watertable)
   - Improve observation about number of fish taken and manner taken
   - Invasive monitoring
   - Seafloor biodiversity monitoring
   - (Increase uses of satellite picturing)-Cost effective activity
3. Enhance user capability through education to improve decision making
   - Regional coordination
   - Enhanced inter-governmental partnerships
   - Strengthen process for ocean use planning process
4. Mitigation of risks to marine resources coasts and communities
   - Improved collaboration
   - Improved monitoring
   -
5. Restoration of Coastal habitats to restore proper ecological function
   - Brownfields cleanup
   - Cost benefit analysis of alternatives and solutions

Other Background Information

1) Procurement, provision, dissemination of knowledge (science, tech. Assist, etc).

2) Healthy Ocean: Balance resource use and protection, by providing information science and technology to enable sustained economic growth and development
3) Enhance and promote partnerships to minimize duplication of efforts and improve quality of science, etc.
4) Restoration of coastal habitats to restore ecological function and economic growth (comprehensive plan) don't stand in way
5) NOAA should be enabler; not implement
6) Understand importance of freshwater
7) Extend NOAA's jurisdiction in the EEZ as lead agency
8) Provide partners, constituents with best science to make best coastal resource management decisions (states make decisions) regarding what constituents do.
9) Science needs to be state of the art and believable
10) Set benchmark with one set of science data
11) NOAA's science needs to be useful but not duplicative
12) Get correct science to correct people
13) Restoration of crucial habitat types—including invasives
14) Expertise
15) Good science
16) Clearing house
17) Financial assistance
18) Stop undesirable invasive species (US after the fact control)
19) Balance resource use and protection
20) Provide information and technology
21) Enable sustained economic growth and development
22) Strong spill response group needed-available SSC Outreach on availability of SSC (and HE needs help)
23) Reactive nitrogen inventory—processes, emissions, deposition, transfer
24) NOAA should provide expertise in coastal land use planning (technical assistance, tech transfer, partnership with other Feds)
25) NPS pollution—work among Fed. Agencies Better (-talk, use same data)
26) Clearing house of one agency talking lead on coastal land use management
27) Extend monitoring of "dead" zone –better baseline data
28) Partnerships with states, universities, all interested parties, private industry, and environmental groups. Need regional flexibility and two-way information flow
29) Integrate existing data collection from others—direction collection to clearinghouse specifications.
30) Promote ocean stewardships environmental education
31) Ensure that adequate fresh water come to Gulf of Mexico
32) Historical water flows to maintain habitat
33) Avoid word with ambiguous meanings—glossary—provide NOAA mandates
34) NOAA should not stand in the way of protection, restoration, environment of freshwater flows
35) Facilitate agencies have conflicting goals
36) See Big picture—conflicting mandates with other Federal Agencies (e.g. can't restore fresh water marsh because now has managed marine SP (EFH)
37) Transfer of scientific information to partners
38) Need for comprehensive Ocean Mgmt.—NOAA should take the lead
39) Extension and engagement
40) NOAA should educate at grade school level—value of ocean and coastal habitats (Sea Grant)
41) Data needs to be useful and applicable
42) Broad based ocean and atmospheric exploration
43) Definitive timeline for completion of CZM process—consistently review (appeal)
44) Streamline permitting/constructing –proactive
45) NMFS vs. coastal development

Performance Measures:

Balance protective use with sustainable economic growth

1) Number of acres protected/permitted/mitigated
2) Number of permits applied for/# permits approved/denied withdrawn --ways NOAA's role—how many because of NOAA's demands.
3) Measure of fisheries recovery to harvestable—populations and catch increase
4) Number of communities engaging in ecotourism

Restoration

1) Number of acres habitat types restored across geographic areas.
2) Measurement of restored function
3) Historic habitat types
4) How close to no net loss by habitat types (permitted/restored/mitigation)

Partnerships

1) Number of interagency agreements
2) Number of parties and number of years
3) Number of people took leave from NOAA to work elsewhere –IPA
4) How much NOAA $ Pooled with other money—leverage resources/matching
5) How much money out through grants program
6) How many partnerships projects NOAA participated in
7) Number of people can provide (fund) (e.g. Fellowships)
8) Changes of processing time on interagency permit actions/consultations

Freshwater

1) Number of acres wetlands and riparian lands protected/restored by watershed
2) Agricultural and forestry BMP implemented
3) Acres freshwater converted to other use
4) Freshwater withdrawals by watershed/aquifer
5) Number storm water mgt plans/NPS plan elements implemented

NOAA enabler

1) Number of law suits against NOAA
2) Time for permit/CZM appeal decision
3) Number vetoes on permit decisions (EFH, ESA, MMPA, etc.)

Outcome #5
Sustainable Species and Fisheries

Strategic Goals:

1. Manage Sustainable Fisheries: (Also defined under Economy/Commerce Goal)
    - Protect marine biodiversity (Better description of interaction of the species)
    - Improved habitat (mapping)
    - Cooperative research
    - Artificial reefs, restoration (stock enhancement),
    - Developing sustainable aquaculture
    - Resolve conflicts over different data sets.
    - Improved observation on catches and location of catches. Population and harvest levels and locations.
    - New approaches to management ie. Community, MPA's, ecosystem.
    - More transparency in assessment of conflicts.

- Determine appropriate capacity levels for fisheries.
- Institute sources of rent for fisheries to create funding stream for resource and management.
- Resolving conflicting federal-state jurisdiction.
- Improved assessments using variety of techniques.

Still need strategies for marine mammals

Other Background Information

1) **Improve management information collection analysis and integration – 4**
2) **Improve mapping of ocean habitat to understand use by all species by life stages – 3**
3) **Management our coastal and living marine at optimal sustainable resource levels – 3**
4) Stabilize fisheries management use using rights based management for fisheries for which it is appropriate. – 0
5) Update hydrologic surveys/charts – 1
6) Develop sustainable aquaculture for consumption and stock enhancement – 2
7) Structure management around ecosystems to greater extent
8) Improved decision processes for fisheries management – 1
9) Define recovery goals for endangered species – 1
10) Increase awareness of and expand measures to prevent damage from invasive species –1
11) Expand inter-governmental university industry and NGO partnerships. – 2
12) Improve accuracy, precision, timeliness of stock status information – 2
13) Improve NOAA's ability to increase compliance – 0
14) Increase social science capability – 0
15) Improve management of species with very limited information –2
16) Encourage non-consumptive utilization of living marine resources – 1
17) More/improved public relations- 1
18) Improve economic evaluation of habitat for fisheries (no number given)

Measures:

1. Time from collection to integration in Management
2. Decrease levels in the amount of bycatch
3. Stakeholder satisfaction levels
4. Data Quality measures
5. Reduction in the amount of backlog data reduced
6. Number of maps developed for specific species
7. Number of coastal and living marine resources managed at optimal sustainable levels
8. Number of candidate, threatened, endangered or trust species in stable or upward trend
9. Number of fisheries recovered
10. Number of fisheries considered managed at optimum levels.

NOAA Staff
(Additional ideas and comments)

Partnerships

1) Energize our partnerships with federal, state, and local government agencies; help them succeed in their mission when it supports a shared outcome; e.g. Coast Guard, FAA, USGS, State, and Local EM's, CZM's, Fish and Wildlife, BMR

Measures:

- Customer Surveys
- Identify and measure shared outcomes with each partner; intensive reviews and deliberate surveys after major events.

Scientific Excellence

1. NOAA's scientific agenda should be set in response to customer/partner needs (regional and national level)

2. Integration across disciplines
3. Partnership with academia and research communities

Measures:

1. Measure the rate of scientific/technical infusion into operations
2. Have dialogue with partners to establish measures and targets
3. Continue current objective measures; e.g. verification
4. Review by external groups e.g. SAB

Outreach

1) Integrate all NOAA's information resources and serve them up in customer friendly ways
2) Integrate NOAA's observational resources, and serve them up in a NOAA friendly way.
3) Spend the time and resources to get the metadata right

Measures:

1. Consistent NOAA method to invite customer input and feedback.
2. Develop a method of counting number of data islands
3. Measure outreach investment of NOAA

Public/Private Relationships

1) Transparency
2) Dialogue
3) Common NOAA Strategy?

Measures:

1. Customer Survey methods
2. Measure/Count formal relationships
3. Determine common outcomes and measure appropriately

People

1) Maintain high quality, motivated workforce through innovative workplace practices (e.g. compressed work schedule, telecommuting, job sharing, IT tools for collaboration)
2) Recognize interdisciplinary career paths
3) Communication, particularly best practices and eliminating barriers.

Measures:

1. SFA
2. Recruitment
3. Retention Data
4. Exit Surveys
5. Monitor of new applicants
6. Expenditures for training/career development

Boston Day 2:

After the opening by VADM Conrad C. Lautenbacher, Jr.(ret.), the five End Outcomes were grouped in to three breakout tables and the external stakeholders were able to choose a discussion table for the first part of the morning. The groups were 1) Protect Lives and Property and Improve National Defense and Homeland Security; 2) Support Commerce and Economic Development; and 3) Healthy Oceans and Coasts and Sustainable Species. The discussion centered on strategies and potential performance measures for the five End Outcomes. After each group briefed on their discussion points the stakeholders were regrouped into three areas concerning the crosscutting areas of Partnership, Science and Environmental Literacy, Education

and Outreach. Again each group presented their findings to the whole group. The information below captures important themes brought up within each group.

National Defense and Homeland Security

1. Exercise Range Available to support DoD requirements.
2. A "GIS" that consists of a National Geospatial frame of reference and the appropriate environmental data (ocean, atmospheric, climatic, terrestrial) at stakeholder defined fidelity.
    - Observational and predictive capability, supports stakeholder fidelity requirement
3. Build Inter-operable observation network
    - Plan to handle data assimilation in view of next generation data volume (satellites, models, etc. etc.)
4. Build and implement "GIS" like approach to data sharing (observational and predictive)
5. Develop Strategy to balance stewardship and defense requirements. (political, scientific, P.R.)

Protect Lives and Property

1. Improve the observational network/database
2. Enhanced modeling
3. Enhance warning systems
4. Education
5. Measuring Lives & Property saved-how?
6. Savings in economy with good forecasting
7. Human behavior – getting out of harms way
8. Communication-Getting the word out
9. Better understanding of how many people to evacuate
10. Improve communication
11. Mitigation strategies to reduce impacts (potential hazards, partnerships with Ins. Agencies
12. Full partnerships with states planning and policy
13. Hazard assessment and mapping – states
14. Climate – historical data-tides, predicting change, reduce observational uncertainties
15. Improved Performance Information
16. Mitigation Performance, Cost/Benefit
17. Education

Sustainable Species

This group began with a discussion of definitions from the buckets. Below are a number of statements of indicators that can be used to identify success.

1. Sustain Fisheries
2. Sustain Marine mammals.
3. Sustain homo-sapiens

    - Also include atmosphere in things to be sustained.
    - Fisheries should include economic outcome, communities, harvest, etc. It is more than just resources.

Fisheries might be better off in the Healthy Oceans bucket.
Add on a sustainable basis at the end of the 2nd bullet. In addition, elements of the group would like to add a "healthy environment for "homosapiens."

4. We need data for the following:
    - Observations
    - Define environment needed
    - Define strategies to preserve environment

5. On the first bullet in the graph with three end outcomes. The following changes should be made.
    - The bullet needs to acknowledge that the environment may be driving species down despite our actions.
    - Modify: Reduce, mitigate or eliminate human removals or impacts to allow recovery.

- We need to study the effects of natural causes.
- Human Removals: we need directed harvest, bycatch, human driven environment, change impact on food chain, pollution.
- Do research on what species needs in the oceans.

6. Refine bullet on responsibilities for trust species. A strategy would be to increase supplies of fish to meet consumption, harvesting of fish on a sustainable basis. This includes aquaculture as well as fishery management.
7. Reduce, mitigate or eliminate human impacts to allow recovery of listed species.
    - Third responsibility for trust species is to maintain healthy populations of all trust species.

Measures.
Below are a list of possible measures under sustainable species and further recommendations.

1. Maintain human removals below levels that allow recovery.
2. Number of species with stable populations
3. Accurate predictions of increases or decreases in fished and protected species.
4. Take appropriate management actions for things we can control based on those predictions
5. Explain to congress and Public – find a different measure than money/fish
6. Number of new stocks assessed.
7. Number of rebuilding plans developed
8. Compliance/implementation rate with environmental laws. Also, environmental audit-compliance/implementation rate.
9. Increase in the body of knowledge
10. Decrease number of overfished species. (Require a definition of "overfished)
11. Number of recovered and delisted species.
12. Multi-species management
13. Mapping habitat (rate of increase)

Below are a number of strategies identified by the group.

1. Reduce numbers of protected species.
2. Improve scientific measures of marine environment and resources
3. Strategies from National academy Report for sustainable resources.
    - Good science
    - Conservative quotes
    - Effective monitoring (observers)
    - Enforcement
    - Reduce over capitalization
    - Rationalization of effort
    - Incorporate ecosystem based management principles
4. Improve PR department (ex. Develop scenarios (how)
5. Develop effective PR from partners
6. Promote our successes. Use examples eg. NPMC
7. Longer term planning and budgeting. Eg. Five year budget horizon like military
8. Incorporate socioeconomic data
9. Map habitat (ocean and freshwater)
10. Improve/expand cooperative research
11. Improve NOAA enforcement ability
12. Develop human capital plan – implement
13. Fix contracting/grant process
14. Mapping ocean habitat to understand use by all species
15. Look at effects of climate change on populations.
16. Increase/Improve environmental literacy
17. Educate public to use NOAA resources
18. Develop and implement plan.

Support Commerce/Economic Development

NOAA job within Commerce and economic development is to provide the information and tools to support:

1. Industry development
2. Trade and commerce
3. Management of resources
4. Improved understanding of value of Resource(s) and marine commerce and healthy environment.

Measures Identified Include:

1. Reduce Trade Deficit
2. Improve products/state of resources
3. Contribution/use of Res,data.
4. Measure on Economic growth in marine industries. Eg. Maritime commerce. (insurance, ballast water, invasive species.

Rationalization of Marine and Coastal Resources

1. Improved Utilization
2. Reduce Bycatch
3. Reduce environmental footprint
4. Reduce Derby Fishing
5. Use weather and climate
6. Resource evaluation/stock assessments
7. Saving lives/fishing in hazardous conditions
8. Recognize roles of all parties (public, industries, communities)
9. Quality of life

Enhance and improve the development useful and usable cross cutting application of environmental conditions.

Recreation and tourism, agriculture, pharmaceutical, new marine products.

1. Enhance understanding of value of resources (e.g. fisheries)
2. Whale watching, coral reefs.
3. Reduce environmental footprint.

Fisheries Aquaculture/wildfish.

1. siting
2. market development and promotion
3. Numebr of new products
4. Getting information out.
5. Technology Development
6. Research and development
7. Market development and promotion
8. Reduce ecological footprint.

Enhance the contribution of Fisheries (aquaculture and wildcatch to the economy)

1. Reduce Trade Deficit
2. Improve state of resources. (amount of seafood available)
3. Economic stability and growth in coastal communities
4. Enhanced information on economic value of marine and coastal resources
5. Improved access to useful and usable information
6. Reduce energy used per unit produced.

Mechanism to prioritize/balance objectives.